

ITS SEMINAR

THE IMPACT OF RESIDENTIAL DENSITY ON VEHICLE USAGE AND ENERGY CONSUMPTION

Co-sponsored by the
Department of Economics
Department of Planning, Policy and Design and
Program in Transportation Science

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12:00 noon - 1:30 p.m.**

Room 408, Multipurpose Academic & Administration Building

The debate over the impacts of urban land use density on travel, residential vehicle use and fuel consumption is often hampered by a lack of reliable quantitative data. Arguments about these relationships have been especially clouded by issues related to the simultaneity of residential location choice and the other variables. This seminar will describe a new modeling system that attempts to account for these effects. The model is estimated with data from the 2001 U.S. National Household Transportation Survey (NHTS) and applied to a sample of over 2, 500 households in the State of California. Results show that the residential density effects are substantial. Comparing two households that are similar in all respects except residential density, a lower density of 1,000 housing units per square mile implies a positive difference of almost 1,200 vehicle miles per year and about 65 more gallons of fuel per household. The total effect of residential density is decomposed into two paths of influence. Increased mileage leads to a difference of 45 gallons, but there is an additional direct effect of density through lower fleet fuel economy of 20 gallons per year, a result of vehicle type choice.

David Brownstone is professor of economics at the University of California, Irvine (UCI). His research interests include discrete choice models, panel analysis, bootstrapping methodology, housing demand, transportation pricing, transportation energy and alternative-fuel vehicles. He has served as a referee for over 20 journals in economics and related fields, including the American Economic Review, Econometrica, International Economic Review, Journal of Urban Economics, Transportation Research and Transportation Science. In the 1980s, Professor Brownstone was an assistant professor at the Stockholm School of Economics and a senior research fellow at the Industrial Institute for Economic and Social Research, both in Stockholm, Sweden. He holds a Ph.D. in economics from the University of California, Berkeley.